Short Report | J Adv Med Biomed Res. 2019; 27(125): 43-48

Journal of Advances in Medical and Biomedical Research

Point-Mutations in embB306 Gene and Their Association with Resistance to Ethambutol in Mycobacterium tuberculosis in Clinical Isolates

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ABSTRACT

Background & Objective: Mutations in embB306 gene and their association with resistance to ethambutol (EMB) in Mycobacterium tuberculosis (M. tuberculosis) have not been fully investigated. The aim of this study was to investigate the pointmutations in emb306B gene and their association with resistance to EMB in M. tuberculosis.

Materials & Methods: This case (M. tuberculosis resistant to EMB) -control (M. tuberculosis sensitive to EMB) study was performed in the West of Iran (2014-2015), in order to determine the sensitivity of M. tuberculosis strains. Polymerase chain reaction (PCR)-DNA sequencing was used for determining the point-mutations of embB306 gene in both groups (sensitive and resistant to EMB). Data was analyzed by SPSS 16 and Fisher's exact test.

Results: Fifty M. tuberculosis strains were isolated from 1019 patients that were suspected to have tuberculosis (TB). 86% of the isolates were sensitive and 14% were resistant to EMB. EmbB306 gene sequencing showed no mutation in control samples; but mutation was observed in 85.71% of resistant samples in case samples. The embB306 mutation showed a significant relationship with EMB resistance (P= 0.00).

Conclusion: Mutations in embB306 were observed in the strains resistant to EMB; however, there was no mutation in the sensitive group. There is a direct relationship between these mutations and this type of resistance, so it is an indicator of creation of resistance to EMB in M. tuberculosis.

Keywords: embB306 Gene, Ethambutol, Mycobacterium tuberculosis, PointMutations